

METHODS FOR IDENTIFYING AGENTS WHICH ALTER  
HISTONE PROTEIN ACETYLATION, DECREASE AGING  
OR INCREASE LIFESPAN

ABSTRACT OF THE DISCLOSURE

- 5       Methods of identifying agents which alter the NAD-dependent acetylation status  
and mono-ADP-ribosylation of proteins are disclosed. The methods further include  
identifying agents which alter the life span or aging of a cell or an organism by  
determining the level of NAD-dependent acetylation and/or ADP ribosylation of a  
nuclear protein. The invention also relates to a mammalian Sir2 protein which acetylates  
10 or deacetylates proteins in a NAD-dependent manner and has mono-ADP-  
ribosyltransferase activity. Host cells producing the Sir2 protein and antibodies to the  
Sir2 protein are also provided.